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SOPHISTICATION, MYOPIA, AND THE THEORY OF LEGISLATURES: AN EXPERIMENTAL STUDY*

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Abstract

Legislatures typically make decisions in stages: for example, first by subsets of members (in committees) and then by the full membership (on the floor). But different theories of two-stage decision-making employ different assumptions about the degree of foresight committee members exercise during the first stage. This paper reviews the relevant theories and reports on several experiments that test whether committees acting in a larger legislature make decisions consistent with the hypotheses of sophisticated or myopic behavior. Under diverse conditions -- including open and closed rules, and homogeneous and heterogeneous preferences -- the predictions of sophisticated behavior are superior not only to those of myopic behavior, but also to several other competing hypotheses. Implications of the findings for future theoretical developments are discussed, as are reservations regarding generalizing about real-world legislatures on the basis of laboratory observations.

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The proposition that committees are crucial in the legislative process has been described so frequently yet disputed so rarely that it is now almost trite; citations to Woodrow Wilson through Richard Fenno are no longer needed to defend the study of committees. However, consensus over the importance of committees does not automatically translate into agreement about how committees ought to be studied. While the development of theories about committees[1] has coincided with the proliferation of studies of actual committees,[2] the resulting accumulated wisdom nevertheless remains bifurcated in some fundamental ways, albeit for understandable reasons. On one hand, theories about committees are not readily testable in the field. Would we know, for example, whether HR 6040, a bill for expansion of the superfund for clean-up of toxic wastes, is in the bargaining set (Aumann and Maschler, 1964) or is a competitive solution (McKelvey, Ordeshook and Winer, 1978)? Would we even know whether it is a median motion (Black, 1948)? On the other hand, empirical research typically is concerned with different questions, such as what part committees play in the larger, much more complex political process.

Although the crossing of theoretical and empirical paths may be rare, researchers of one persuasion or the other are neither ignorant of the other's work nor oblivious to the limited applicability of their own. For example, the possibility that "naturally occurring political committees do not exist in splendid isolation" was acknowledged by Fiorina and Plott (1978, p. 593), who tested several hypotheses about committee decision-making. Although their experiments were designed only "to explain what goes on within the 'black box' of committee decision-making" (p. 576), they later asked:

> [I]f the committee decision is regarded by the members as only one stage in a sequence of games, might behavior in the committee reflect strategic considerations from the larger game? If so, a game might produce implications for the committee stage which differ substantially from those implied by models successful in explaining the processes of isolated committees (p. 593).

The Fiorina-Plott possibility appropriately stresses the connection between theories of committee decision-making and actual committee decisions in more complex institutional settings. Moreover, it does so with an implicit but nonetheless crucial focus on <u>prediction</u> of committee decisions -- something that is often perfunctorily dismissed in field research as an unattainable goal.

This paper seeks to assess our ability to predict committee decisions -- specifically, decisions of committees that are embedded in an ongoing institution, such as a legislature. The major focus is on two theories that embody the Fiorina-Plott possibility. The central question is: Can committees that act in multi-stage settings behave with foresight, and, if so, to what extent is their exercise of foresight predictable in various institutional settings? Part I is a

discussion of the essential similarities and differences of two theories of legislatures. Part II is a description of the design of experiments conducted to test several hypotheses. Parts III, IV and V assess the possibility and predictability of sophisticated strategies in committees, and the predictability of outcomes on the floor. And Part VI is a discussion of some doubts about and implications of the findings.

I. TWO THEORIES OF LEGISLATURES

Formal theories of legislatures are relatively new, although their foundations can be found in the early works of Black (1948, 1958). The pioneering extension of Black's theory of committees to institutionally richer settings is that of Shepsle (1979), whose formalizations of the distinguishing characteristics of legislatures can be paraphrased (informally) as follows:

1. Decisions are made in two (or more) distinct stages by different subsets of actors at each stage.
2. A committee system assigns every decision-maker to at least one subset of decision-makers, called a committee.
3. A jurisdictional system assigns every dimension of the policy space to one or more committees and grants committees the exclusive right to make initial proposals to change the status quo in those dimensions over which they have jurisdiction.
4. Amendment control rules specify the conditions under which committees' proposals will be considered by the parent body (full set of members).

The remaining assumptions of committee-based theories of legislatures are more traditional, namely:

5. Decision-makers have diverse but consistent preferences (variously characterized as transitive, single-peaked, or positively monotonic in distance).
6. Voting is the means by which individual preferences are amalgamated into collective decisions.

Consideration of a fundamental equation of politics helps to delineate present concerns. Suppose that political outcomes result from three types of ingredients: — preferences of decision-makers for various policies; institutional features that specify the rules of the game, such as when, how and by whom decisions are made; and strategies that decision-makers employ in their attempts to obtain preferred outcomes. Simply expressed:

$$\text{Outcomes} = f\ (\text{Preferences, Institutions, Strategies}).^{3}$$

Whereas two similar extensions of Shepsle's theory (Denzau and Mackay, 1983; Krehbiel, 1983) differ fundamentally from their predecessor only in terms of strategies, the main focus here is on the third component of the equation. The strategic assumption in Shepsle's theory is that committee members vote sincerely (a la Black), in which case a committee always chooses a bill that can be represented as the ideal point of the committee's median voter. In contrast, foresight at the committee stage is incorporated into extended theories, in which the existence and location of committees' bills depend not only on preferences of committee members but also on preferences of noncommittee members, on the status quo point, and on the rules governing the offering of amendments on the floor.

For two such rules -- open and closed -- figure 1 illustrates the differences in bills and outcomes attributable exclusively to different strategic assumptions. Ideal points of committee members are shown as x's, noncommittee members' ideal points are o's, and vertical bars denote status quo points. All members are assumed to have single-peaked, symmetric preferences, and jurisdictions are unidimensional and nonoverlapping.

[figure 1]

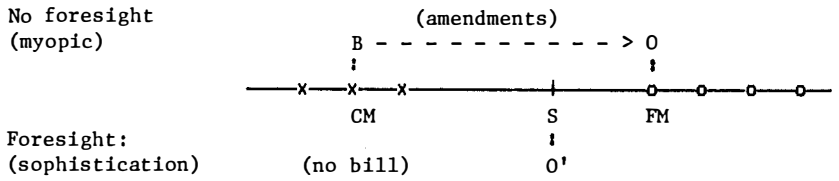
Under the assumption of sincere behavior the committee always reports a bill (B) equal to its median voter's ideal point (CM). Under the open rule (figure 1a) the reporting of such a bill is always followed by an amendment process that results in convergence of the amended version(s) of the bill to the floor median (FM), which ultimately becomes the outcome (O). Under the closed rule (figure 1b) the bill is again CM. Members, however, are barred from proposing amendments, so the second stage of decision-making consists of a single, binary choice on the floor between the bill (B) and the status quo point (S). Since the floor median voter's ideal point is closer to S than to CM, he, and all members to his right, vote against the bill, so the outcome is S.

Yet both situations are <u>ripe</u> for sophisticated behavior in the sense that a majority on the committee can benefit from non-sincere action.[4] In all ripe open rule settings, at least a majority of members prefers the status quo (S) to the projected outcome (FM) under the amendment process. Whereas the committee and jurisdictional

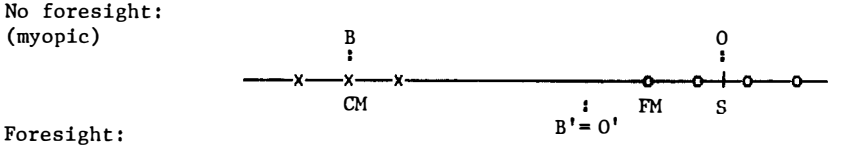
Figure 1

Myopic versus Sophisticated Committee Strategies in Ripe Situations

a. Open Rule



b. Closed Rule



<u>Key</u>:

x	ideal point of committee member
o	ideal point of noncommittee member
CM	committee median voter's ideal point
FM	floor median voter's ideal point
S	status quo point
B	committee's bill
O	outcome

systems confer the exclusive right to make proposals to the committee, obstruction -- i.e., refusal to report a bill -- is a preferred strategy for the committee. Similarly, the committee members in ripe closed rule settings prefer a victorious strategically placed bill (B'=O'), which barely obtains the vote of the floor median voter, to the committee median bill (B=CM), which ultimately loses to S.

The comparison of bills and outcomes under each assumption supports the characterization of committee strategies as myopic or sophisticated, depending on the refusal or willingness of the committee to exploit ripe situations. Admittedly, the characterization is simple, as are the underlying theories. However, the luxury afforded by theoretical simplicity in this case is a set of unambiguous and testable hypotheses whose rejection or verification can guide future theoretical developments. That such guidance is currently lacking is illustrated by the agnosticism with which the aforementioned theorists view their strategic assumptions. Shepsle, understandably, is more concerned with demonstrating the properties of structure-induced equilibria than with developing a predictive theory of legislative outcomes.[5] Denzau and Mackay implicitly assume that sophistication is a better assumption than myopia, but they neither argue nor refer to actual legislative occurrences to defend the assumption. And elsewhere I have suggested that diversity of congressional committees makes both sets of assumptions plausible, depending on dominant goals of committee members, as studied by Fenno (1973). But with the exception of scattered anecdotes and some

secondary analyses, empirical answers to the question of myopia versus sophistication of committees in legislatures do not exist. Nor, similarly, is there substantial evidence that institutional features such as rules have predictable effects in two-stage decision-making. Consequently, the theory of legislatures remains detached from actual behavior.

While the gap between theory and data is unfortunate from the standpoint of predicting political outcomes, it is nevertheless understandable in light of several cold hard facts of field research that correspond precisely to the ingredients of the fundamental equation of politics: preferences and policies are often ambiguous, susceptible to change, and difficult to observe and measure; institutional features are remarkably complex; and strategies are potentially as diverse as the individuals that employ them. In light of these obstacles, experimentation is a reasonable alternative means for assessing the possibility and predictability of sophisticated strategies in committees.

II. EXPERIMENTAL DESIGN AND HYPOTHESES

The design phase of the experiment consisted of the creation of situations that closely reflect the theoretical ingredients of preferences and institutions, but that leave strategies undetermined. Thus, induced preferences were single-peaked, symmetric and separable; jurisdictions were unidimensional and nonoverlapping; rules were either open or closed; members were divided into committees that were assigned unique jurisdictions; and decisions were made by majority

voting. Essential features of the experiment are outlined in this section. Additional details are presented in appendices.

Issues and policies were represented as lines and as points on a line, respectively. Each of two committees in small experiments and three committees in a large experiment had exclusive jurisdiction over one dimension of the policy space, which therefore was two- or three-dimensional, depending on the experiment. Thus each committee was uniquely empowered to make an initial motion to change the status quo on its issue. If a committee was unwilling or unable to report a bill to the floor, the status quo was designated the outcome.

Preferences were induced by compensation charts which, for each issue, showed the subject's ideal point, his/her compensation for each possible outcome, other subjects' ideal points but neither their compensation curves nor their identity, the status quo point, and the rule under which the committee's bill would be considered on the floor. A sample compensation chart was included in the instructions. (See Appendix A.) Each subject had one compensation chart per session. A session consisted of two stages of decision-making on each issue: a "small group" (committee) stage in which a bill may have been selected and reported, and a "large group" (floor) stage in which all subjects acted on the committees' bills. Members were prohibited from looking at other subjects' compensation charts and at their own compensation charts for future sessions. The units in terms of which proposals were expressed differed across committees, (e.g., 0-100 for committee A, 500-1500 for committee B), but issues were always

represented by a 100-unit line on graph paper.

Committees operated under different rules at different times but each committee was assigned the same rule for its first two sessions. In several cases one and only one characteristic of the situation was permitted to vary from session to session or from committee to committee. These features of the design provided several controls and ultimately made it possible to answer questions, such as: Do changes in rules and/or the status quo affect strategies and outcomes, ceterus paribus? If myopic or some other strategies are prevalent among inexperienced committees, do such committees learn sophisticated strategies? Moreover, is sophistication transferable across institutional settings, e.g., from open to closed rule situations?

A trial session of the second (floor) stage was conducted before each experiment to acquaint subjects with the open and closed rules. Subjects were encouraged to ask questions during the trial session but were not compensated for the trial session outcomes. Actual sessions commenced when committees were sent to different rooms for the first stage of decision-making. An experimenter accompanied the subjects but did not interfere with their deliberations except to answer questions. After each committee completed its decision on whether or what bill to report to the floor, subjects were brought together for the second stage which was supervised by an experimenter who recorded on a blackboard the votes, the status of the bill, amendments, etc., and who recognized subjects who wished to make or to discuss proposals. Subjects, therefore, could always see the issue currently

under consideration, the numerical values of the current bill and amendment (if any), and the votes of other subjects.

Three experiments were conducted. The two smaller and identical experiments consisted of three sessions in which five subjects were assigned to two committees of sizes three and two. The third experiment was larger and longer, consisting of four sessions in which fifteen subjects were assigned to three committees, each of size five. Together the three experiments yielded 24 observations (12 under each rule). Each observation consists of a committee decision (bill or obstruction) at stage one and an outcome (bill, amended bill, or status quo) at stage two. Subjects from the first and third experiments were undergraduates at the California Institute of Technology. Subjects in the second experiment were students at Pasadena Community College.

Although the main objective of the experiment was to assess the possibility and predictability of sophisticated versus myopic strategies, a larger set of observable possibilities was acknowledged a priori. Experimental outcomes could have been consistent with any of the following: the hypothesis of myopic behavior, the hypothesis of sophisticated behavior, either of the above hypotheses depending on the settings, any of several alternative hypotheses (specified below), or no known hypotheses.

These possibilities compose a continuum of possible results. In general, the higher on the list, the better the state of the legislative theory would seem to be. For example, if no hypotheses

are supported or if only a hypothesis lacking explicit theoretical derivation is supported, the necessary conclusion would be that the prevalent legislative theories -- both myopic and sophisticated — are misguided. In contrast, consistent support for the hypotheses of myopic or sophisticated behavior would suggest that, as new and simple as it may be, theoretical research of legislatures appears to be on the right track.[6]

Given the specific focus on committee strategy, the primary concern is with the prediction of bills. The main hypotheses are those of myopia and sophistication.[7]

1. The myopic prediction is always the committee median. It is a straightforward application of Black's theorem within committee, irrespective of the committee's place in the larger, more complex institutional setting.

2. The sophisticated prediction depends upon rules and ripeness. Specifically, under the open rule and ripeness for obstruction, the prediction is that the committee will report no bill. Under the closed rule and ripeness for sophisticated placement, the prediction is a bill whose value equals:

   $$FM - |FM - S| + \varepsilon \quad \text{if} \quad CM < FM, \quad \text{(see figure 1b) and}$$
   $$FM + |FM - S| - \varepsilon \quad \text{if} \quad CM > FM,$$

   where ε represents a distance barely detectable to the floor median voter.[8]

Since neither the myopic nor sophisticated theory is likely to predict perfectly, four competing hypotheses are also considered: the floor median, the floor mean, the committee mean, and the focal point.

3. The floor median hypothesis is an application of Black's theorem in a special situation for which it probably was not intended but nevertheless can be defended. Specifically, the committee may select the floor median as its bill because its members either will not consider or will not be swayed by the advantages of obstruction, or they may anticipate convergence to the floor median and therefore try to minimize amendments on

the floor by reporting a bill near the anticipated outcome in the first place. Note that while the prediction differs from that of committee sophistication, the rationale underlying the median prediction embraces one essential element of sophisticated behavior, namely, foresight.

4. The floor mean hypothesis is that the bill will be the arithmetic mean of ideal points of all subjects. The basis for this prediction is perhaps more normative than descriptive. Because under some conditions the mean maximizes social utility,[9] decision-makers may consider it "good" or "fair" in some sense. Committees that report floor mean bills are regarded as somewhat sophisticated, since they would appear to anticipate future decisions. Nevertheless, their sophistication would appear to be driven by a different mechanism than individual or small group maximization.

5. The committee mean hypothesis reflects the same concern for "good" or "fair" decisions, but in the smaller, initial decision-making arena. Since floor members' preferences would seem not to be considered by committees operating under this principle, committee mean bills are inconsistent with the sophistication hypothesis, but somewhat consistent with myopia.

6. The focal point hypothesis is that bills and outcomes will be clustered on or about the center of the policy space. With the possible exception of Schelling's (1963) "obvious point," this idea is foreign to the study of politics, but apparently is subscribed to by experimental psychologists in some settings. It is regarded as more consistent with myopia than with sophistication.

While few readers are likely to take all such hypotheses seriously, each hypothesis is likely to have some appeal to some readers. Assessment of their predictive abilities, therefore, seems worthwhile, even though the experiments were designed principally to assess the sophisticated and myopic hypotheses.

III. THE POSSIBILITY OF SOPHISTICATION

Responsiveness of committees to rules and to the location of the status quo point are necessary conditions for the exercise of sophistication. The theoretical propositions that rules matter and

that the status quo matters are well known, but empirical support for them is rare, with Romer and Rosenthal (1978) being an important exception. By design, the experiment permits an opportunity to further corroborate the propositions and, in turn, to establish that sophistication is indeed possible.

In six pairs of situations, the configuration of ideal points and the rule were fixed and only the status quo changed between sessions.[10] For each of the six pairs, the change in the location of the status quo point had an effect on committee action. Figures 2a and 2b are typical examples. In 2a the committee reported a bill of 650 to the floor, after which it was amended to 720, the floor median. In 2b, under identical ideal points and rules but a different status quo point, the committee refused to report a bill, thus the outcome was the status quo point.

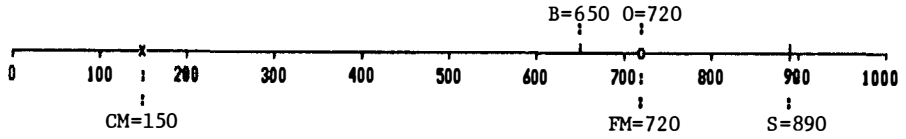
[figure 2]

The differences between these results and Romer and Rosenthal's are subtle but important. In Romer and Rosenthal's referendum setting, an individual agenda setter makes a single proposal to the electorate, knowing that the electorate cannot modify it. The legislative analogue is that of a one-member committee (agenda setter) reporting a bill (referendum proposal) to the floor (electorate) for consideration under a closed rule (referendum). In contrast, in the experimental settings in figures 2a and 2b the open rule is in effect and the first-stage decision is a collective choice by a committee whose members know that their proposal (if any) can be amended in the

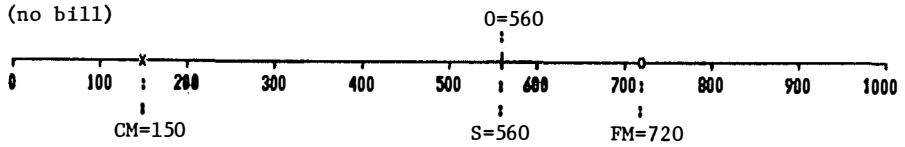
Figure 2

Effects of Changing Rules or Status Quo Points
with Preferences Constant

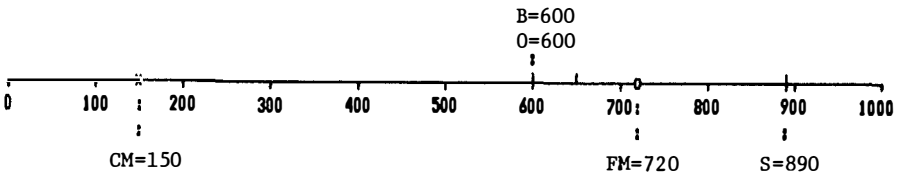
a. Open Rule, Nonripe
(Observation 7)



b. Open Rule, Ripe
(Observation 9)



c. Closed Rule, Ripe
(Observation 23)



*Individual's ideal points are presented in Appendix C.

next stage of decision-making. The key similarities, however, are that the status quo determines the strategic opportunities of the proposer(s) and that the proposer(s) are responsive to its location.

Similarly, there were three pairs of situations in which only the rule changed. The effect -- different bills and outcomes under different rules -- also supports the possibility of sophisticated behavior. For example, figures 2a and 2c are identical with the exception of the rule, yet the committee's bill and the outcome are notably different.

IV. THE PREDICTABILITY OF COMMITTEE STRATEGY

With the possibility of sophistication established, the natural follow-up questions concern prediction. Are sophisticated strategies more common than myopic ones? Are they somehow natural or must decision-makers learn them from experience or from observation? Are sophisticated and myopic predictions more or less accurate than other predictions? A divided focus on open and closed rule decisions provides the answers.

Open rule.

Predictive accuracy is a dichotomous matter in one and only one case: the sophisticated prediction under the open rule in ripe situations is that the committee will obstruct. Thus if obstruction occurs the prediction is correct; if a bill is reported the prediction is incorrect. Figure 3 summarizes the 12 open rule sessions in the three experiments, 10 of which were ripe for obstruction. (The data

are normalized as described in Appendix B.)

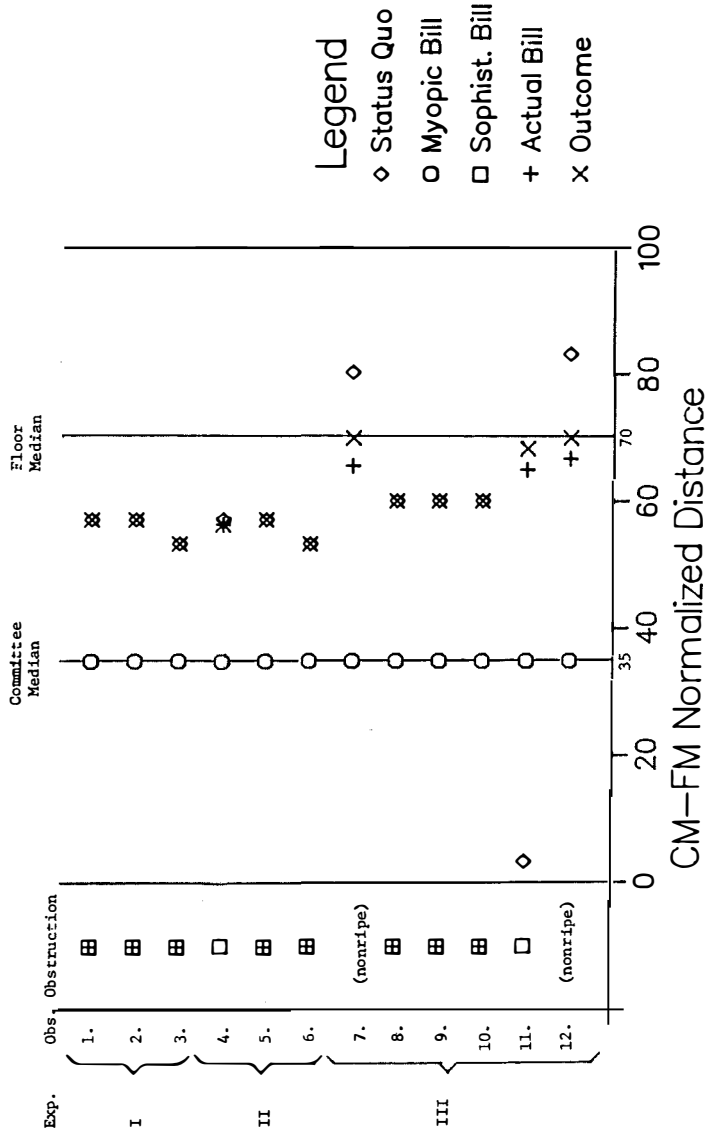
[figure 3]

The most straightforward evidence of sophisticated strategy is that in 80 percent of ripe situations (8 of 10), committees indeed refused to send a bill to the floor. Since no other hypothesis predicts obstruction, the sophistication hypothesis is obviously superior in terms of percentages. But obstruction, while common, is not universal. What, then, can be learned from instances in which committees do report bills to the floor, contrary to the theory of sophisticated committees? Since there were only two such instances, an analysis of deviant cases is tractable as well as illuminating.

The first unpredicted decision to report a bill was made by the three person committee in the experiment II (observation 4 in figure 3). The non-normalized version of this situation is displayed with members' ideal points in figure 4a. It was the committee's first meeting, and subject 3 immediately said "Well, it seems the thing to do here is find a happy medium -- something the big group will be happy with," after which he began to calculate the mean of ideal points. Scarcely had he begun his calculations, however, when subject 1 interrupted: "Wait a minute. We hold a majority here; if we stick together we can pass anything." Notwithstanding the subject's quick identification of a design problem in the small experiment (namely, rarely if ever do legislatures have standing committees whose membership is a majority of the parent body[11]), the ensuing discussion among committee members revealed evidence closely related to the

Figure 3

Open Rule: Situations, Predictions and Outcomes



question of sophistication versus myopia. But, unlike the committee's decision, its discussion was more consistent with the sophistication hypothesis than with its myopic counterpart. Subject 1 ultimately consented to report a bill of 900 (just one unit from the status quo point on the 1000 unit scale), but only after making two rather sophisticated points to his fellow committee members. First, he made it clear that he could "default" (defect) in the large group, in which case he predicted an outcome considerably below the status quo. Second, he nevertheless vowed not to defect because, in his words, "If I'm in a good position now, you probably will be later." In short, 1 tried to convince 2 and 3 that in the long run, a strategy of committee unity was probably best. In two of its three sessions, the committee pursued the unified strategy, which, of course, would not have worked had the committee not been a majority.

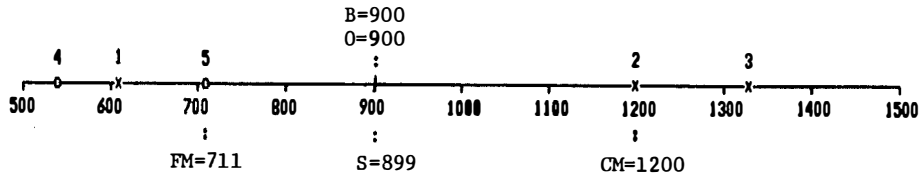
[figure 4]

The second and only other instance of reporting of a bill in a situation ripe for obstruction occurred in the large experiment in a situation purposely designed to be a most difficult test. Figure 4b represents the third session for committee C in the large experiment (observation 11 in figure 3). In the previous sessions this committee's bills were considered under the closed rule, so it had no prior first-hand experience with the open rule. The ideal points for the committee members are scattered throughout the space, making it most difficult for subjects to conspire, identify, and execute the sophisticated strategy. And, finally, the key subject -- the

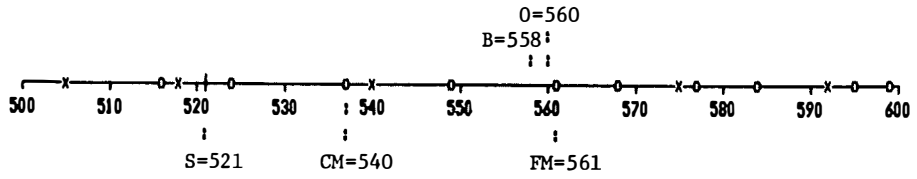
Figure 4

Failures of the Sophisticated Prediction
Under the Open Rule

a. Experiment II, Session 1, Issue A
(Observation 4)



b. Experiment III, Session 3, Issue C
(Observation 11)



committee median -- is almost indifferent between the status quo and the floor median, barely preferring the former. (In terms of his monetary payoff, the difference was worth only 20 cents.) Under these circumstances, the committee's refusal to obstruct is understandable, although this is not to deny that the sophisticated prediction failed.

But the overall case for sophistication is strengthened implicitly with additional analysis of all open rule situations in which the committee reported a bill. Combining the two nonripe situations with the deviant cases in figure 4 provides four such observations (4, 7, 11 and 12 in figure 3). The question is whether in cases of reporting of a bill, committees were inattentive to floor preferences and anticipated floor behavior -- in accordance with the hypothesis of myopic committees -- or whether the alternative hypotheses (3-6) are superior. A simple test is that of differences in mean errors, where "error" is defined as the distance between the predicted and actual bills. The hypotheses for the statistical test are:

$$H_0: \ \bar{E}_i - \bar{E}_j < 0$$
$$H_A: \ \bar{E}_i - \bar{E}_j \geq 0.$$

$\bar{E}_i$ is the average error for the myopic prediction ($i = 1$); $\bar{E}_j$ is the average error for other non-sophisticated predictions ($j = 3,\ldots,6$). Rejection of the null hypothesis, therefore, demonstrates the inferiority of the myopic prediction.[12]

Presented in table 1, the results clearly call for rejection of the null hypothesis. In spite of the small number of observations,

each difference in average errors is significant at less than .05. With the exception of the committee mean prediction, each difference is significant at less than .01. Furthermore, visual inspection of individual observations revealed that without exception, committee bills were closer to floor means and medians than to the committee median. Combined with actual deliberations of committee members and the prevalence of obstruction in ripe situations, this evidence continues to favor the contention that attentiveness to preferences on the floor and expectations about floor activity played a major part in prior committee decision-making, even for those relatively few committees for which obstruction did not come naturally.

[table 1]

Closed Rule.

The analysis of closed rule experiments is similar to that for the open rule. The main difference is that in closed rule settings the sophisticated prediction is directly comparable to other predictions because each identifies a point or small region of the policy space on or in which the committee's bill should lie. Consequently, the earlier percent-correct analysis is unnecessary, and hypothesis tests and visual inspection of committee decisions are sufficient to answer the question of whether committees behave predictably and with foresight in closed rule settings. The hypothesis tests now focus on the prediction of sophistication.

$$H_0: \ \bar{E}_i - \bar{E}_j \geq 0$$
$$H_A: \ \bar{E}_i - \bar{E}_j < 0$$

Table 1

Errors in Predictions of Bills when Sophistication Prediction Fails* (Open rule: N = 4)

Prediction	$\bar{E}$	$\bar{E}_1 - \bar{E}_j$	t	p
1. Myopic	28.5	-	-	-
3. Floor Median	6.5	22.0	4.6	.010
4. Floor Mean	3.5	25.0	13.7	<.001
5. Committee Mean	21.1	7.4	2.6	.040
6. Focal Point	9.8	18.7	9.8	.001

* t statistics are one-tailed.
p is the probability of improperly rejecting the null hypothesis: $\bar{E}_1 - \bar{E}_j < 0$, j = 3,4,5,6.

$\bar{E}_i$ is the average error of the sophisticated prediction (i = 2), and $\bar{E}_j$ are the average errors for other predictions (j = 1,3,4,5,6). Rejection of this null hypothesis demonstrates superiority of the sophisticated prediction.

Table 2 shows the consistent and confident rejection of the null hypothesis with respect to each competitor, and figure 5 unambiguously illustrates how committees are capable of and willing to sophisticatedly place bills to capture the floor median voter. With the sole exception of observation 18 (again, the unified majority committee), bills were on or very near the sophisticated prediction. Moreover, little if any learning was required by the committees: even those confronting a ripe situation in their very first session conformed to the hypothesis of sophisticated behavior. Sophisticated placement in closed rule settings, therefore, appears to be even more natural than sophisticated obstruction in open rule settings.

[table 2 and figure 5]

V. PREDICTABILITY OF OUTCOMES

While the main purpose of the experiment was to test predictions about committee decisions, the preceding results strongly suggest that first- and second-stage decisions are inextricably linked. An examination of decision-making on the floor further clarifies this relationship.

Open rule.

The sample from which we make inferences about floor behavior

Table 2

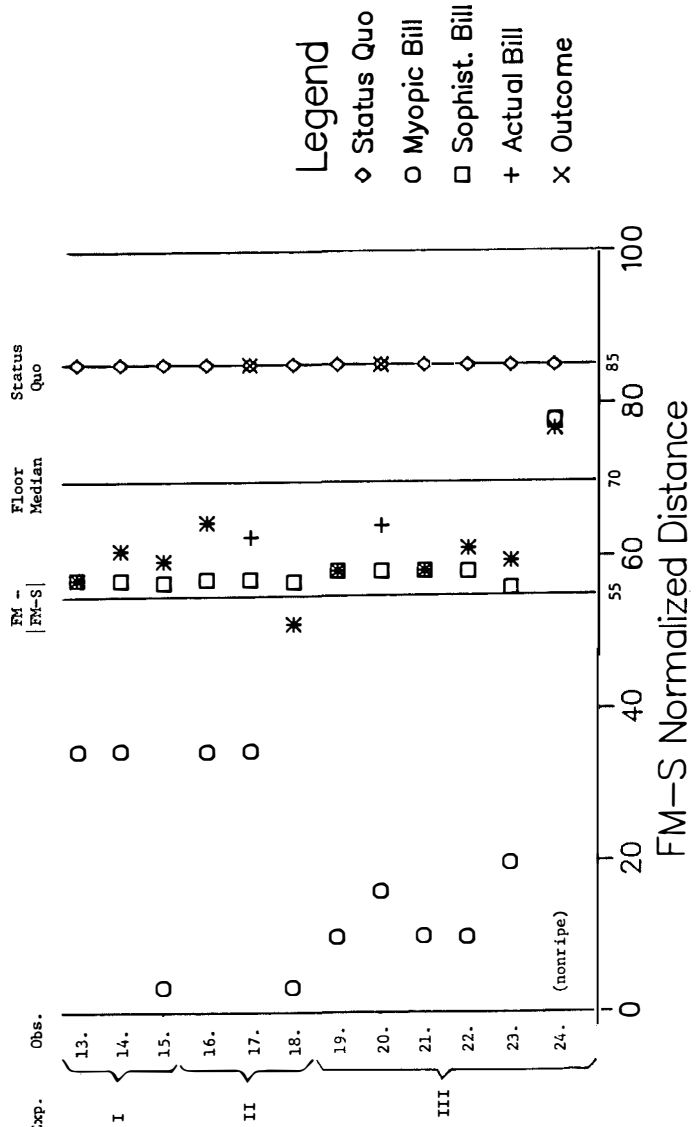
Errors in Prediction Under the Closed Rule*
(Ripe situations: N = 11)

	Prediction	E	$E_2 - E_j$	t	p
1.	Myopic	40.4	-37.1	-10.0	<.001
2.	Sophisticated	3.4	-	-	-
3.	Floor Median	10.4	-7.0	-4.35	<.001
4.	Floor Mean	5.9	-2.5	-1.7	.057
5.	Committee Mean	32.4	-29.0	-9.4	<.001
6.	Focal Point	38.4	-35.0	-5.4	<.001

* t statistics are one-tailed.
p is the probability of improperly rejecting the null hypothesis:
$E_2 - E_j < 0$, $j = 1,3,4,5,6$.

Figure 5

Closed Rule: Situations, Predictions and Outcomes



under the open rule is necessarily small because bills were reported to the floor in only 4 of the 12 open rule situations. But conditional on a committee reporting a bill, sophisticated and myopic predictions of outcomes are identical:[13] amendments should converge to FM, which Shepsle has shown to be a structure-induced equilibrium.

Of the four relevant observations (4, 7, 11, and 12 in figure 3), three are consistent with this prediction, otherwise known as Black's median voter theorem. In observations 7 and 12, the outcome was precisely equal to the floor median voter's ideal point. And in observation 11 the outcome was 560, with FM at 561. Once again, the outlier is observation 4 -- the unified majority committee.

Closed Rule.

Predicted outcomes in ripe situations under the closed rule are also contingent upon the location of the reported bill. If the bill is sophisticatedly placed, it should pass; otherwise it should fail and the status quo is the outcome.

In the 11 ripe situations (13-23 in figure 5), 10 bills were placed near the sophisticated prediction (all except observation 18). In those 10 sessions, the sophisticated bill passed 8 times. The two exceptions are informative. The failure of the sophisticated bill in observation 17 is also attributable to the unified majority committee. This time, however, the unfailing loyalty of subject 1 transcended his committee's jurisdiction when he voted contrary to his induced preferences and thus sealed the defeat of the other committee's bill. (Both of his committee colleagues preferred the status quo to the

bill, and voted as such.)

The second exception (observation 20) occurred because subject 2 made a mistake. After the vote was recorded and the outcome was announced, he pleaded that he be allowed to change his vote, and proponents of the bill vociferously joined in his cause. But ultimately he was informed that such favors are reserved for members of Congress. In subsequent sessions, the mistake had precisely the effect predicted by Denzau and Mackay: "Incomplete information and risk aversion . . . [will] lead committee members to behave in a more cautious fashion under the closed rule" (1983, p. 759). In two of the three remaining closed rule sessions, committees moderated their proposals more than they thought was necessary, fearing, as one subject put it, that "some dumb turkey on the floor won't know what's good for him." In other words, risk-aversion manifested itself in attempts to build coalitions that were slightly larger than minimal-winning (cf. Riker, 1962, and Koehler, 1972).

Effects of the mistake were also evident in rhetorical strategies on the floor, where committee members' concerns were sometimes blatant enactments of power as persuasion, a la Neustadt (1980). Neustadt described the essence of presidential power as the ability of the executive to induce others "to believe that what he wants of them is what their own appraisal of their own responsibilities requires them to do in their interest, not his" (1980, p. 38). One committee member implicitly took Neustadt's advice with this terse speech on the floor: "I remind the person at 533 that this bill is definitely in his or her

best interest, so by all means, he or she should vote for it," which indeed she did.

VI. DISCUSSION

The most convincing and consistent result of the experiments is the failure of the hypothesis of myopic behavior. But on a more constructive note, a competing theory has been corroborated. In short, sophisticated behavior by committees is not only characterizable theoretically nor is it a mere empirical possibility. In these experimental settings, sophistication was the typical strategy, moreover a strategy that renders outcomes predictable.

If when compared with previous experimental evidence on committees and, more specifically, on agenda setting, this finding appears redundant, two unique features of these experiments deserve further emphasis. First, these were situations in which the agenda setter was a committee -- not an individual as in the models of Romer and Rosenthal (1978) and Mackay and Weaver (1983) and in the experiments of Isaac and Plott (1978), Kormendi and Plott (1982), Stengel and Miller (1983) and Eavey and Miller (1984a, 1984b). Therefore, in these experiments support for the hypothesis of sophistication required that several individuals conspire to exploit ripe situations. While the possibility of collective exercises of sophistication often has been posited somewhat anthropomorphically by treating the committee as a unit with a single preference (e.g., Weingast, 1981, p. 156; Shepsle and Weingast, 1981, p. 514), it

remained to be demonstrated that even committees whose members have diverse preferences can exercise sophistication. Second, this phenomenon is not institution-specific; collective exercises of sophistication were prevalent under open and closed rules. Furthermore, since sophisticated predictions are different under each institutional setting, the alternative possibility that committee members simply found the best strategy quickly and adhered to it consistently without regard to rules can be rejected. Optimal committee strategies are functions of preferences and institutions, and the committee members collectively demonstrated a predictable responsiveness to both.

While these conclusions are inescapable with respect to the experimental legislature, the hazards of extrapolating from the laboratory to the field are fully acknowledged. Such issues are discussed at length in Fiorina and Plott (1978) and in Plott (1979), and skeptical readers are encouraged to study their compendia of reservations and rebuttals. For present purposes, however, a rehashing of the pros and cons of experimental research generally is less informative than a discussion of the usefulness of these particular findings on sophistication versus myopia. Specifically, four sources of skepticism are anticipated.

Subjects versus legislators. An initial argument is that experimental subjects are different from legislators. This contention cannot be disputed, but examination of its implications diminishes its damage. Because the subjects in the experiments obviously had no

prior legislative experience (in neither real nor experimental legislatures), we would expect that relative to experienced legislators the subjects would be less inclined to respond to situations strategically. Thus the obvious difference between subjects and legislators probably biases the test in favor of the myopic hypothesis, which was confidently rejected in spite of differences between subjects and legislators.[14]

Information Conditions. A second possibility is that favorable information conditions made identification and employment of sophisticated strategies too easy. The response is three-fold. First, information was not as good for individual subjects as it may seem. While committee members knew the distribution of ideal points, they knew none of the following: which ideal point belonged to which member, the monetary value of outcomes to other members at their ideal points, or the induced utility functions of other members (whether linear, quadratic, symmetric, etc.). Second, the unavailability of such information appeared, if anything, to make subjects somewhat more sophisticated than the simple theory predicts. Rather than simply assume that everyone's payoff functions were linear and symmetric, committee members sometimes modified their bills to allow for the possibility of either irregular preferences (such as asymmetry) or nonmaximizing behavior (such as the avowed mistake of subject 2 in observation 20). Third and perhaps most important, the effects of information conditions on sophisticated behavior by committees can be studied in subsequent similar experiments, as McKelvey and Ordeshook

(1984) have done in an electoral setting, for example.

Multidimensionality. If experimental committee settings were unidimensional but congressional committee settings often are not, are these findings irrelevant to congressional decision-making? Not necessarily. In practice, committees with multidimensional jurisdictions divide their attention. The House Education and Labor Committee, for example, rarely considers legislation that pertains both to education and to labor. Furthermore, even within single but nevertheless technically multidimensional jurisdictions, the most controversial parts of legislation are often unidimensional[15] or are perceived by most members as such.[16] And finally, generalization of the theory of sophisticated committees to multidimensional settings would not change its underlying rational. Under open rules, for example, the necessary and sufficient condition for sophisticated obstruction is that the status quo is preferred by a committee majority to the expected outcome under the amendment process. A problem, of course, is that unless theoretically stringent and empirically rare conditions are met (Plott, 1967), the expected outcome is not straightforwardly characterizable theoretically because of the cyclic majority preference relation. In actual settings, however, committee members almost surely have expectations about the relative likelihood of possible outcomes, in which case expected utility theory is a promising vehicle for the extension of the form of the theory tested here (see Denzau and Mackay, 1983, and Enelow and Hinich, 1984). A testable conjecture is that sophistication still

occurs under conditions of imperfect information, but that more learning is required for committee members to exhibit it.

Repeated Play Design. A final basis for skepticism towards these findings is that the two main theories of legislatures pertain to single play situations (one committee decision followed by at most one floor decision), but that the experiment provided for repeated play (multiple sessions). This created an opportunity for equilibria different from those of the static models. For example, conditions were potentially conducive for Axelrod's (1981, 1984) emergence of cooperation or for Weingast's (1979) norm of universalism. Specifically, committee assignments were fixed throughout the experiment, thus committee members knew they would have future interactions with one another. Moreover, the number of sessions was not specified, thus defections from contemplated cooperative strategies could not unravel from the end to the beginning of the experiment.

The reason committee members were not reassigned between sessions (aside from the logistical confusion that was likely to have ensued) was that learning was expected to be necessary for sophistication. However, because learning was not required, and because committees were sophisticated even in the presence of opportunities for cooperative behavior, the findings are perhaps all the more convincing. With the sole exception of the now familiar member in experiment II who indeed anticipated long-term gains from short-term "nice" strategies (Axelrod, 1984, p. 33), decision-making

consistently competitive in committee and on the floor. Coalitions substantially larger than minimal winning simply did not form.

To infer that the hypothesis of universalism, too, should be rejected would exceed the bounds of the test which focused on sophisticated versus myopic strategies -- not on minimal-winning versus universal coalitions. Nevertheless, reconsideration of the hypothesis does seem appropriate, and future studies should note two points. First, the absence of cooperation in these experiments contrasts with findings of previous but quite different experiments, such as Miller and Oppenheimer (1982) and Eavey and Miller (1984a). Second, in spite of considerable diversity in these and other experiments, none seems to have incorporated fully the essential conditions for cooperation, namely, long-term repeated play with a high probability of continued interaction with present adversaries.

In conclusion, even if all such reservations were (or can be) successfully refuted, no claim is made to have proved the theory of sophisticated committees. No matter how stringent the test and how convincing the results, there remains a possibility that other heretofore unspecified models will predict just as well. But whereas this inability to prove theories is not unique to experimental research, and whereas a similarly successful model is not likely to be developed in the near future, it seems only reasonable to exploit these findings in future research of all sorts: theoretical,

experimental, and empirical. Specifically, theorists of legislatures may comfortably table the assumption of uniform sincere voting within committees and instead can focus either on mixtures of sincere and sophisticated strategies (Denzau, Riker and Shepsle, 1984), or on refined versions of committee sophistication (Denzau and Mackay, 1983; Enelow and Hinich, 1984). Concomitantly, experimentalists can begin to test such revised theories in laboratory settings, while empiricists can proceed with a more focused search for instances of sophisticated strategies in actual legislatures.

APPENDIX A

INSTRUCTIONS

This is an experiment in majority decision-making. The instructions are simple. If you follow them carefully and make good decisions, you can earn a considerable amount of money. The currency used in the experiment is francs. Each franc is worth ___ dollars to you. Do not reveal this value to anyone. At the end of the experiment all of your earnings over ___ francs will be converted to dollars and paid to you in cash.

There will be several sessions in the experiment. Each session has two stages: a small group stage and a large group stage. Each of you belongs to the large group and to one of three small groups: participants 1-5 are in small group A, 6-10 are in B, and 11- 15 are in C.

Each small group has the exclusive right to make an initial decision on a given issue. An issue is represented as a simple number line, and a group's decision is represented as a point on the line. In the first stage of a session each small group meets in a different room. If a majority of members in a small group approves of a point, the point becomes a bill and is taken to the large group for the second and final stage of decision-making in the session. The large group then decides whether to accept, reject, or, in some cases, amend the bill. The final decision of the large group is called the outcome.

COMPENSATION

The amount you earn in each session depends on the outcomes on issues A, B, and C. Before each session, you will study a compensation chart that tells precisely how much you earn for any possible outcome. For example, look at your compensation chart for Session 0. The outcome on issue A may be anywhere between 0 and 1000. If, for example, the outcome on issue A is the point, 500, then you will receive compensation of 400 francs. If the outcome is 900, however, your compensation would be only 200 francs. Notice that as the outcome gets farther and farther from the point you like most, your compensation always declines.

In any group -- small or large -- different participants typically want different outcomes. The point you like most is always represented by a star (*). The dots (.) along the bottom of the chart represent the points that other individuals like most. Thus if the specific compensation levels for some other participant were drawn (as yours is) the peak on that individual's chart would be directly above his/her dot, just as your peak is directly above your star.

The chart also shows a status quo point (S) for each issue. If a small group decides not to take a bill to the large group, or if the large group cannot reach a final decision on the bill, the status quo point will be the outcome, and you will be compensated accordingly.

For example, if the status quo is the outcome on Issue A for Session 0, you would earn 450 francs.

You should keep all of these things in mind and decide before each session which point you want the large group to choose. Then do whatever you can within the rules to get things to go your way. How or how much you participate does not matter, as long as you obey the rules.

RULES FOR SMALL GROUPS

The small group must make one -- and may make two -- decisions. It must decide whether or not to take a bill to the large group. And if it decides to, it must decide on the location of the bill. The bill must have a numerical value different from the status quo (S) and between the two endpoints of the chart. Small group meetings will be unstructured, but the following rules must be obeyed.

1. Each member of the small group must have an opportunity to propose a bill and to discuss the merits or demerits of any proposed bill.
2. At least three members of the small group must vote to take a bill to the large group, but remember that a small group is not required to take a bill to the large group. If a small group explicitly decides not to take a bill to the large group, or if it is unable to reach majority agreement on a bill, no decision- making will take place in the large group and everyone's compensation will be based on the status quo point (S) for that issue.
3. You may not discuss issues other than that of your own small group, nor may you look at compensation charts for sessions other than the current session.
4. You may not mention anything quantative about your compensation, such as how much a point is worth to you, whether you have begun to profit, etc. You may, however, discuss which points you do and do not like, why you like or dislike them, etc. Under no circumstances can you make agreements about activities that might involve other participants after the experiment. For example, physical threats and deals to share earnings are prohibited.

RULES FOR THE LARGE GROUP

If the small group takes a bill to the large group, the bill will be the first point to be considered. The process of decision-making in the large group depends on what rule -- open or closed -- is in effect. The compensation chart tells you what rule will be in effect for each issue.

Open rule. Under the open rule, any member may propose an amendment to move the bill to a different point, but only one such amendment can be active at any given time. Suppose, for example, you are participant #5 and the small group's bill is at the point 155, but you want the large group to consider the point 166. Then you simply state "#5 moves to amend the bill from 155 to 166." Your amendment

becomes active when it is repeated and recorded on the board. Any member of the large group may then speak for or against the amendment. After discussion, a vote is taken. If the amendment passes by a majority vote, the point 166 becomes the new bill, and it may then be amended. If the amendment fails, the bill remains at the point 155, but is still subject to further amendments until debate is formally ended (see below). To summarize, majority-approved amendments simply change the location of the bill. You may discuss and pass as many amendments as you wish.

At any time during consideration of an amendment or bill, a motion to end debate is in order. If there are no objections, either an immediate vote is taken on the active amendment (if any), or a final vote is taken on the bill (if there is no active amendment). If any participant objects to the motion to end debate, however, the motion to end debate will itself be put to a majority vote. If it fails, the process continues where it left off. If it passes, a vote on either the amendment or bill (as specified above) is taken.

Closed rule. Under the closed rule, the bill cannot be amended by the large group. The only decision of the large group is whether to accept or to reject the bill. Discussion is permitted until a motion to end debate passes (or receives no objections), after which a final vote is taken on the bill. If the bill receives a majority of votes (for example, 8 of 15), it becomes the outcome. If it fails to receive a majority, the status quo point (S) is the outcome.

Additional rules for the large group.

1. Only one person may speak at a time.
2. You may take notes, but you may not pass notes.
3. You may not view other participants' compensation charts, and you should keep your own chart out of view of others.
4. Rules 3 and 4 for small groups also pertain to the large group.

To demonstrate open and closed rules, motions to end debate, etc., we will conduct a trial session of the large group, using the information on your compensation chart for Session 0. We will assume that the small groups made these decisions: small group A decided not to bring a bill to the large group; small group B decided that its bill (on Issue B) will be 9; and small group C chose 581 for its bill (on Issue C). Please mark these on your compensation chart.

Now, to prepare for the trial session and the actual experiment, please take the quiz on the next page.

QUIZ

Refer to Issue A on page 2 to answer questions 1-6.

1. At ___ I would make the most possible money from the outcome on Issue A. The amount I would earn is ___ francs.

2. At ___ I would make the least possible money from the outcome on Issue A. The amount I would earn is approximately ___ francs.

3. If the small group does not bring a bill to the large group, I would earn ___ francs because the outcome would be ___. If the outcome was a larger number, I would earn _____ (more/less) money.

4. If 210 is the small group's bill is at the point 210 and an amendment to move it to 500 fails, then the bill is at the point ___.

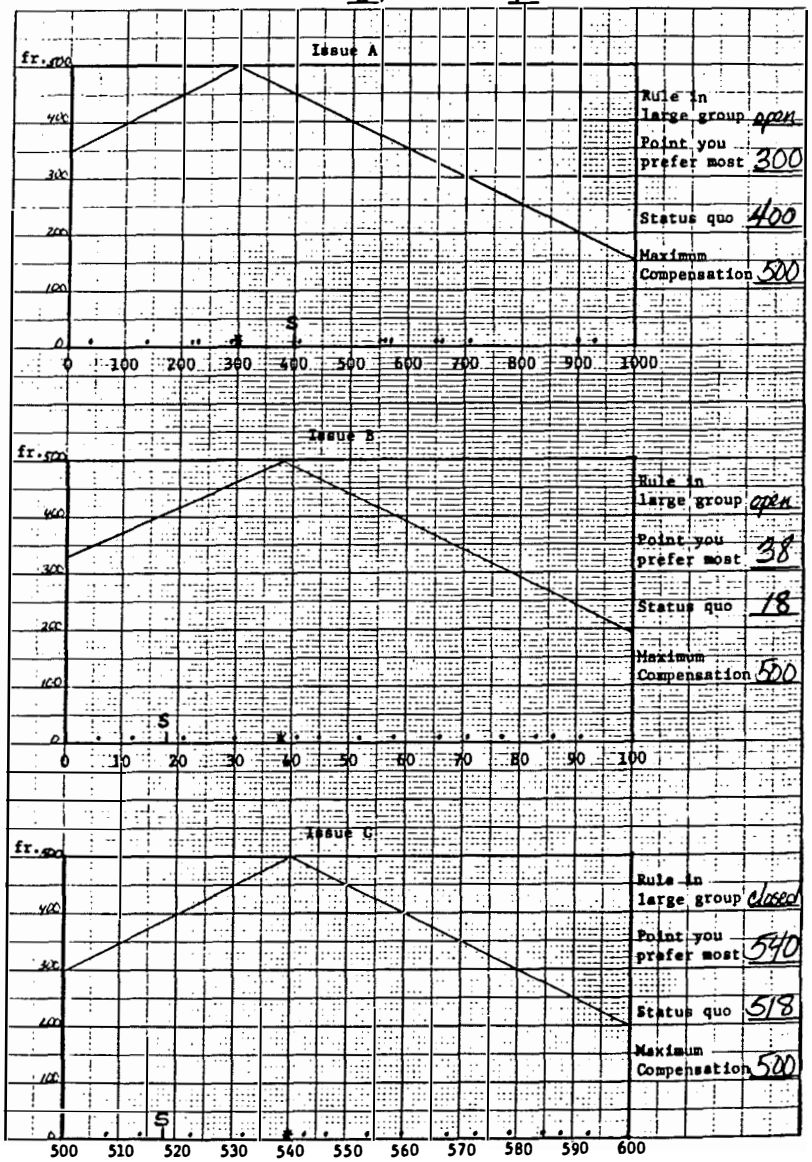
5. If an amendment to move the bill from (the answer in 4) to 440 passes, then the bill is at the point ___.

6. If a motion to end debate is made and no one objects, a vote is taken on the bill. Can any amendments be offered after this vote (yes/no) ___? If the bill fails, then the outcome is ___.

7. Now look at Issue C. Notice that the bill is at 581 and that the closed rule is in effect. Can the point 544 be offered as an amendment ___ (yes/no)?

8. If a vote is taken and the bill fails, the outcome will be ___, and I will earn approximately ___ francs.

SESSION 0, PARTICIPANT 1



APPENDIX B

NORMALIZATION OF DATA

Normalized data were used for figures and tables reported in the text. First, all points (ideal points, FM, CM, S, bills, outcomes and predictions) were linearly transformed to a 0-100 scale. (For some observations all such values were subtracted from 100 to invert the configuration.) Second, points were converted to normalized distances from a specified key point, depending upon the rule. Specifically, where FM, CM and S were the 0-100 normalized values of the floor and committee medians and the status quo, their respective normalized values, FM^*, CM^*, and S^* were defined according to the rule. Open rule situations were always transformed with CM^* and FM^* fixed at 35 and 70 respectively. Closed rule situations were normalized with FM^* and S^* fixed at 70 and 85. With these reference points, the normalized values of all other points were computed as distances from CM^* (in open rule situations) or from FM^* (in closed rule situations). Algebraically, for a point x, its normalized value, x^*, was computed as:

$$x^* = CM^* + \frac{CM^* - FM^*}{FM - CM}(x - CM), \text{ under the open rule, or}$$

$$x^* = FM^* + \frac{S^* - FM^*}{S - FM}(x - FM) \text{ under the closed rule.}$$

APPENDIX C

TABLES OF SITUATIONS, PREDICTIONS AND ERRORS

Table C1

Situations in Experiments I and II

Obs.	Ses.	Iss.	Ideal Points Committee A 1	2	3	Comm.B 4	5	CM	FM	SQ	Rule	Ripe
1,4	1	A	610	1200	1360	530	711	711	1200	889	Open	Yes
13,16		B	98	74	71	51	52	71	52	79	Closed	Yes
2,5	2	A	610	1200	1360	711	530	711	1200	889	Open	Yes
14,17		B	71	98	74	51	52	71	52	79	Closed	Yes
15.18	3	A	610	1200	1360	530	711	711	1200	601	Closed	Yes
3,6		B	71	74	98	51	52	71	52	62	Open	Yes

Table C2

Situations in Experiment III

			Ideal Points																	
			Committee A					Committee B					Committee C							
Obs.	Ses.	Iss.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	CM	FM	SQ	Rule	Ripe
7	1	A	80	180	220	150	30	800	520	940	840	920	970	720	740	330	790	150	720	890	Open	No
8		B	20	48	6	16	8	92	82	78	85	97	3	28	26	67	21	85	28	44	Open	Yes
19		C	535	549	546	548	539	542	502	537	543	518	513	515	511	517	522	515	535	540	Closed	Yes
9	2	A	80	180	220	150	30	790	330	740	720	970	920	840	940	520	800	150	720	560	Open	Yes
10		B	8	16	6	48	78	85	20	26	97	92	21	67	28	82	3	85	28	44	Open	Yes
20		C	551	570	578	543	583	580	589	587	590	576	575	550	556	552	585	550	576	581	Closed	Yes
21	3	A	340	410	430	390	450	10	120	70	510	180	30	80	530	190	210	410	210	160	Closed	Yes
22		B	42	92	57	65	60	45	80	47	94	84	40	51	46	90	66	80	60	55	Closed	Yes
11		C	549	561	598	516	584	568	537	577	524	595	540	518	592	504	575	540	561	521	Open	Yes
23	4	A	80	180	220	150	30	800	480	940	840	920	970	720	740	330	790	150	720	890	Closed	Yes
24		B	68	37	77	24	95	40	18	92	4	75	49	61	98	16	84	40	61	21	Closed	No
12		C	521	567	526	528	503	508	516	506	552	530	585	535	531	597	592	585	530	509	Open	No

Table C3

Non-normalized Predictions and Results

				Predictions (bills)						Results	
Obs.	Exp.	Ses.	Iss.	Myopic	Soph.	F.Mdn.	F.Mean	C.Mean	Focal	Outcome	Bill
13	I	1	B	1200	*	711	882.2	1057	1000	889	*
1			A	52	64	71	69.2	51.5	50	64	64
14		2	A	1200	*	711	882.2	1057	1000	889	*
2			B	52	64	71	69.2	51.5	50	66	66
3		3	A	1200	810	711	882.2	1057	1000	790	790
15			B	52	*	71	69.2	51.5	50	62	*
16	II	1	A	1200	*	711	882.2	1057	1000	900	900
4			B	52	64	71	69.2	51.5	50	68	68
17		2	A	1200	*	711	882.2	1057	1000	889	*
5			B	52	64	71	69.2	51.5	50	79	67
6		3	A	1200	810	711	882.2	1057	1000	850	850
18			B	52	*	71	69.2	51.5	50	62	*
19	III	1	A	150	**	720	548.7	132.0	500	720	650
8			B	85	*	28	45.1	86.8	50	44	*
7			C	515	531	535	528.6	515.6	550	531	531
9		2	A	150	*	720	548.7	132	500	560	*
10			B	85	*	28	45.1	64	50	44	*
20			C	558	572	576	571.5	565.2	550	581	574
21		3	A	410	250	210	263.3	404	500	250	250
22			B	80	64	60	63.9	70	50	63	63
11			C	540	*	561	555.9	545.8	550	560	558
23	4	A		150	560	720	546	132	500	600	600
24		B		40	40	61	55.9	45.8	50	43	43
12		C		585	**	530	539.8	568	550	530	535

* no bill

** no prediction

Table C4

Errors in Predictions of Bills*

Prediction	Errors (1)	(2)	(3)	(4)
Open Rule (N = 4)				
1. Myopic	28.498	828.991	37.000	1556.000
3. Floor Median	6.503	59.166	8.475	110.052
4. Floor Mean	3.515	15.485	4.702	33.309
5. Comm. Mean	21.093	498.074	28.175	1041.893
6. Focal	9.813	101.245	12.000	153.500
Closed Rule (N = 12)				
1. Myopic	40.474	1761.747	22.091	619.000
2. Sophisticated	3.416	17.865	2.000	6.364
3. Floor Median	10.447	121.819	5.982	49.420
4. Floor Mean	5.929	44.029	3.343	16.608
5. Comm. Mean	32.396	1120.438	18.164	437.398
6. Focal	38.435	1876.316	17.455	323.818

* Entries in column (1) were used in the t-tests, and are mean absolute deviations between the predicted and actual bills, fully normalized as described in Appendix B. Entries in column (2) are squared deviations between predicted and reported bills. Column (3) and (4), respectively, are mean errors and squared errors of data normalized only to a 0-100 scale.

APPENDIX D

COMPENSATION OF SUBJECTS

In the experiments I and II, subjects were compensated according to the formula:

$$D_k = \gamma_k \left\{ \sum_{i=1}^{3} \sum_{j=1}^{2} F_{ijk} \right\} - \delta_k \qquad (1)$$

where

D_k is the total dollar compensation for the kth subject,

γ_k is the his/her franc-to-dollar conversion rate,

δ_k is the floor amount of francs above which the kth subject profited

The quantity inside parentheses is the sum of earnings in francs over all sessions and issues (1 = A and 2 = B). Francs earned were always linear functions of distance, specifically:

$$F_{ijk} = M_{ijk} - \beta_{ijk} N_{ijk} \qquad (2)$$

where

F_{ijk} is the number of francs received by k in session i, for issue j,

M_{ijk} is the maximum amount k can receive (at his/her ideal point),

N_{ijk} is the 0-100 normalized distance between the actual outcome and k's ideal point in session i, issue j, and

β_{ijk} is the slope of k's (linear) preference curve.

In turn, M_{ijk} and β_{ijk} were functions of α_{ijk}, a weight assigned to the subject for the session and issue. Specifically,

$$M_{ijk} = 50\ \alpha_{ijk} \tag{3}$$

$$\beta_{ijk} = .5\ \alpha_{ijk}. \tag{4}$$

Thus D_k in (1) ultimately depends upon the 3 x 2 x 5 weight matrix, α, the conversion rate vector, γ, the participation fee, δ, and, of course, the ideal points and outcomes. The values of α, γ, and δ are given in table D1, and comparable data for experiment III (for i = 1 to 4 sessions, j = 1 to 3 issues and k = 1 to 15 subjects) is presented in table D2. Although the parameter values appear to vary greatly, the final earnings, by design, were quite uniform.

Table D1

Weights (α), Conversion Rates (γ) and Participation Fees (δ) for Experiments I and II

α =

(i)	(j)	(k) 1	2	3	4	5
1	1	.3	8	3	2	.2
	2	.2	4	4	4	.4
2	1	.4	10	4	2	.2
	2	.2	4	2	5	.5
3	1	.3	10	5	1	.1
	2	.1	2	2	5	.5

γ = [.5 .025 .05 .05 .5]

δ = [20 400 150 250 25]

Table D2

Weights (α), Conversion Rates (γ) and Participation Fees (δ) for Experiment III

	(i)	(j)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
			(k)														
α =	1	1	2.0	10.0	4.0	2.0	10.0	2.0	1.0	5.0	2.0	1.0	5.0	2.0	1.0	5.0	2.0
		2	1.0	5.0	2.0	1.0	5.0	4.0	2.0	10.0	4.0	2.0	5.0	2.0	1.0	5.0	2.0
		3	1.0	5.0	2.0	1.0	5.0	2.0	1.0	5.0	2.0	1.0	10.0	4.0	2.0	10.0	4.0
	2	1	2.0	10.0	4.0	2.0	10.0	2.0	1.0	5.0	2.0	1.0	5.0	2.0	1.0	5.0	2.0
		2	1.0	5.0	2.0	1.0	5.0	4.0	2.0	10.0	4.0	2.0	5.0	2.0	1.0	5.0	2.0
		3	1.0	5.0	2.0	1.0	5.0	2.0	1.0	5.0	2.0	1.0	10.0	4.0	2.0	10.0	4.0
	3	1	2.0	10.0	4.0	2.0	10.0	2.0	1.0	5.0	2.0	1.0	5.0	2.0	1.0	5.0	2.0
		2	1.0	5.0	2.0	1.0	5.0	4.0	2.0	10.0	4.0	2.0	5.0	2.0	1.0	5.0	2.0
		3	1.0	5.0	2.0	1.0	5.0	2.0	1.0	5.0	2.0	1.0	10.0	4.0	2.0	10.0	4.0
	4	1	1.0	5.0	2.0	1.0	5.0	1.0	0.5	2.5	1.0	0.5	2.5	1.0	0.5	2.5	1.0
		2	0.5	2.5	1.0	0.5	2.5	2.0	1.0	5.0	2.0	1.0	2.5	1.0	0.5	2.5	1.0
		3	0.5	2.5	1.0	0.5	2.5	1.0	0.5	2.5	1.0	0.5	5.0	2.0	1.0	5.0	2.0
γ =			.10	.02	.05	.10	.02	.05	.10	.02	.05	.10	.02	.05	.10	.02	.05
δ =			300	1500	600	300	1500	600	300	1500	600	300	1500	600	300	1500	600

FOOTNOTES

1. A partial list includes Black (1948, 1958), Plott (1967), Farquharson (1969), McKelvey (1976), Shepsle (1979), Denzau and Mackay (1983), Krehbiel (1983), and Enelow and Hinich (1984).

2. See, for example, Fenno (1966, 1973), Manley (1970), Price (1972), Ferejohn (1974), Schick (1980), Unekis and Rieselbach (1984), and Smith and Deering (1984).

3. While additional formality is not needed in this paper, the similarities between this relatively stylized equation and an alternative formulation combining elements of social choice and game theory is worth noting. Letting X represent outcomes, $\underline{R}$ a profile of individuals' preferences, G a given institutional arrangement, and S a set of individuals' strategies, and then defining Θ and $\underline{S}$ as sets of all possible preference profiles and strategies (respectively), the social choice function $F:\Theta \rightarrow X$ is implemented by a game form $G:\underline{S} \rightarrow X$ in such a way that for all profiles $\underline{R} \epsilon \Theta$, $F(\underline{R}) = G \circ \xi(\underline{R})$, where $\xi:\Theta \rightarrow \underline{S}$ is the equilibrium correspondence of G.

4. Formally, a situation is <u>ripe</u> <u>for</u> <u>sophisticated</u> <u>obstruction</u> in unidimensional jurisdictions if $S \succ_{cm} FM$. That is, the status quo must be preferred by the committee median voter to the floor

median. A situation is ripe for sophisticated placement if

$CM < S < FM$ or $CM > S > FM$, and

$|FM-S| \leq |FM-CM|$.

i.e., S must be between CM and FM, and FM must be at least as close to S as to CM.

5. However, his subsequent research with various colleagues has moved away from the assumption of sincerity. See, for example, Shepsle and Weingast (1984a) and Denzau, Riker and Shepsle (1984).

6. The ordering of the first and second hypotheses is debatable. Myopia is listed first because it preceded and was developed with more rigor than the theories that employ the assumption of sophistication.

7. Hereafter, deliberate stylistic misdemeanors in the use of adjectives are committed in order to avoid bulky sentences. For example, the terms "myopic prediction" and "sophisticated hypothesis," technically (but verbosely) mean "the prediction based on the assumption of myopic committees" and "the hypothesis that committees will behave sophisticatedly, as specified by the theory," respectively.

8. Operationally, ε equals one unit on the graph paper on which subjects' compensation charts were drawn. Thus, for example, on a 0-1000 scale $\varepsilon = 10$; on a 0-100 scale, $\varepsilon = 1$.

9. Summation of individual utilities is sometimes called a Benthamite social welfare function. If preferences are quadratic -- such as: $U_i(\theta) = \max - (x_i - \theta)^2$, where $U_i(\theta)$ is member i's utility for proposal θ, and max is his utility at his ideal point, x_i -- then the Benthamite social welfare function is maximized at the mean of ideal points. See Shepsle and Weingast (1984b, footnote 9) or Krehbiel (1984, footnote 7) for proofs.

10. Situations are regarded as identical up to linear transformations. For example, in experiment III, session 1, the situation for committee A was the same as session 2 for committee B, except that ideal points were inverted and transformed from a 0-1000 scale to a 0-100 scale, and the status quo was moved from outside to within the region between CM and FM. Appendix B presents these and other data that determine the strategic situations.

11. An obvious exception, of course, is the House's Committee of the Whole which, for theoretical purposes, is regarded as the parent body, not a committee.

12. Alternatively, hypothesis tests could be conducted with mean squared errors, or with nonnormalized data from which either absolute or squared errors are computed. In all cases, the results are consistent with those discussed in the text.

13. McKelvey and Niemi (1978) prove that if a Condorcet winner (an alternative that beats all others) exists, sophisticated voting ensures its selection. From Black (1958) we know that FM is such a point.

14. Some of the subjects had participated in other experiments, but not in committee experiments. Moreover, experiments I and II were identical and had virtually identical results in spite of different subject pools, one of which was expected to be less inclined to exercise sophisticated strategies.

15. See, for example, Asbell (1978), whose detailed discussion of the extension of the Clean Air Act -- an enormous and complex piece of legislation -- suggests that the overriding consideration in committee was the setting of permissible levels of NOx in the surprisingly well-defined range of .4 to 2.0 grams per mile.

16. For example, the Maritime Authorization Bill (HR 5723) of the 98th Congress contained at least three specific provisions: construction subsidies, loan guarantees and development funds. Yet members seemed to evaluate the legislation more parsimoniously in terms of how much it helped American shipbuilders, in effect collapsing three (or more) dimensions into one. See Congressional Quarterly Weekly Report, October 2, 1982, p. 2443.

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